

SONY

3-Chip CCD Color Video Camera

DXC-M7
(NTSC)



3CCD

DXC-M7—A NEW STANDARD OF EXCELLENCE FOR CCD VIDEO CAMERAS

Sony is pleased to introduce the DXC-M7.

With the adjunct of the DXC-M3A, high quality video became affordable. With the appearance of the DXC-3000, videographers were freed from many of the limitations imposed for years by tube technology.

By combining the experience gained in the production of tens of thousands of professional CCD cameras, and a near generation of CCD sensors, Sony engineers have achieved a quantum leap in the performance of solid state cameras.

Integrating a higher density CCD array (developed to increase resolution while actually decreasing noise) with signal processing developed to complement the unique characteristics of CCD's, the DXC-M7 actually produces a better picture than could even be hoped for in a tube camera at anywhere near the same cost.

Lessons learned from thousands of customers have also led to a system of camera ergonomics, controls and accessories more flexible than any other camera ever equipped to the professional video community.



DXC-M7 OUTSTANDING FEATURES

HIGH QUALITY IMAGE REPRODUCTION

The DXC-M7 adopts a new 3-chip Interline-Transfer CCD image sensor block. Sony's advanced CCD technology allows the packing of over 380,000 picture elements onto a tiny chip that is only $8.8 \times 6.6\text{mm}$. The high density CCD incorporates an advanced structure which enables DXC-M7 to reproduce high quality video images. The DXC-M7 also employs a Liner Matrix circuit for exceptionally accurate color reproduction.



High Resolution

With the high density CCD chips accurately mounted on the prism by Sony's spatial offset technology, the DXC-M7 provides true 700 TV lines (luminance) of horizontal resolution.

Excellent Signal-to-Noise Ratio

The DXC-M7 delivers an excellent S/N ratio of 60dB as a result of reduced dark current, the on-chip pre-amplifier and the Correlated Double Sampling circuit of Sony's advanced CCD technology.

High Sensitivity

The excellent signal-to-noise performance and wide aperture ratio of Sony's CCD offers a high sensitivity of F5.6 at 2,000 lux (3,200°K). The DXC-M7 allows full gain up switching for low light shooting without greatly increasing the noise.

Smear Reduction

Thanks to the newly developed double P-Well structure at the image sensor, the smear phenomenon on the DXC-M7 has been remarkably reduced.

Other Sony CCD Advantages

In addition to the excellent performances described above, the DXC-M7 features a multitude of CCD advantages.

- No geometric distortion
- High image burn resistance
- Low lag
- No magnetic field interference
- High resistance to vibration and shock
- No blooming
- No comet-tails

Linear Matrix

The Linear Matrix circuit is a processing circuit for adjusting camera color reproduction. It adjusts spectrum characteristics electrically for ideal. Thanks to the Liner Matrix circuit, the DXC-M7 reproduces video images with high fidelity.

VARIABLE SPEED ELECTRONIC SHUTTER

The DXC-M7 features a variable speed electronic shutter which is built into the imager. This enables the DXC-M7 to capture clear images of objects in high speed motion. Extremely clear playback of still or slow-motion pictures can also be obtained. This function greatly improves the dynamic resolution when shooting moving subjects.



Shutter OFF

1/1000 second

Shutter Speed

OFF (1/60), 1/100, 1/250, 1/500, 1/1000, 1/2000 second

The shutter speed can be selected on the camera head. It is also possible to control the shutter function remotely from the CCU-M7 Camera Control Unit or the RM-M7G Remote Control Unit.

ADVANCED CONTROLS

Various controls and adjustments maximize the superior functions and picture quality of the DXC-M7. Controls from the very basic to the very advanced can be adjusted on the camera head without detaching the side cover.

Dynamic Contrast Control

The Dynamic Contrast Control enables the DXC-M7 to reproduce detailed color pictures, even when a highly contrasted object is being shot. The DXC-M7 can reproduce a dynamic range of up to 600%.



Dynamic Contrast Control ON

Dynamic Contrast Control OFF

Knee Point Control

The DXC-M7 employs the Dynamic Contrast Control function to automatically control the knee point according to the incoming light intensity. When the contrast of picture high lights requires more delicate adjustment, the knee point can also be controlled manually by the UP/DOWN switches.



Gamma Controls

The DXC-M7 is normally set to provide the standard gamma characteristics with the gamma correction circuit. However, when more delicate adjustments are required, the gamma can be manually controlled by the UP/DOWN switches on the camera head.



Detail Level Control

The DXC-M7 employs a 2-line image enhancer to improve the sharpness of the picture obtained. The enhancement level of the image enhancer can be controlled manually by the UP/DOWN switches.



Pedestal Level Controls

The pedestal level can be adjusted by the UP/DOWN switches on the camera head. Both the master pedestal and the R/B pedestals are independently adjustable.



Auto Iris Override

When the auto iris is activated, the iris is controlled automatically. The DXC-M7 allows the auto iris reference level to be controlled manually when the auto iris is functioning. The auto iris reference level can be controlled by five steps, depending upon the lighting conditions (+1F stop/+0.5F stop/Preset/-0.5F stop/-1F stop).



FOR MORE CONVENIENCE

Stable Weight Balance

The DXC-M7 promises the utmost stability for on-shoulder operation. The DXC-M7 was designed to have a balanced center of gravity and to be comfortable when carried on the shoulder. It minimizes the movement of the center of gravity even when the NP-1A Rechargeable Battery Pack is installed into the battery compartment of the camera body, therefore providing operational comfort and stability in any shooting style.

Three VTR START Switches

The DXC-M7 employs three VTR START switches to activate the connected VTR—on the side of the camera

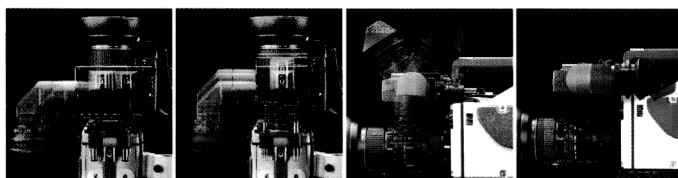


head, on the front below the lens mount, and on the lens grip. A cameraperson can easily start and stop the recording of the connected VTR in any shooting style.

DXF-M7 Multi-Position Viewfinder

The DXF-M7 1.5-inch Monochrome Viewfinder has three position adjustments. The position of the DXF-M7 can be adjusted by sliding it to the left or the right, as well as backward or forward. The cameraperson can easily set the DXF-M7 for the most comfortable viewing position. For various shooting styles, such as hand-held, low-angle, etc., rotation adjustment is also possible.

In addition, the diopter can easily be adjusted to allow the most comfortable viewing by the operator, with or without eye lenses.



White Balance Memories

The DXC-M7 employs white balance memories. Up to two white balance values can be memorized for each of the four optical filter positions.

SMPTE Color Bars

The DXC-M7 can generate the SMPTE color bars for signal adjustments. The chroma level, hue, saturation and brightness of the monitor can be easily and accurately adjusted by using the SMPTE color bars.



Easy Maintenance

All boards of the DXC-M7 are installed vertically into the camera body to increase durability against external vibration and shock. Major adjustments can be done on the volume controls and switches with a small screw driver, without detaching the boards.



Supplied VCL-915BYA Zoom Lens (DXC-M7K only)

- Newly designed for the DXC-M7
- Very low chromatic aberration
- 15x zoom lens
- Macro mechanism
- 12-pin interface connector



Other Features

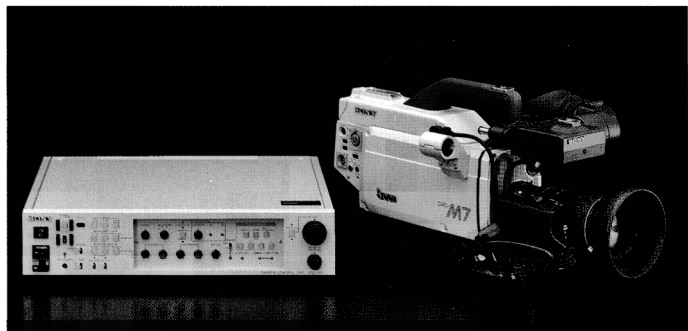
- Built-in RS-170A sync generator
- Genlock capability with the VBS or the BS signal
- 2-line vertical/horizontal image enhancer for increased sharpness
- Color temperature conversion filters for optimum color balance, indoors and outdoors
- Supplied VCT-14 Tripod Adaptor for rigid attachment to the tripod (DXC-M7K/M7 only)
- Conductive rubber shielding of the camera body to avoid RF interference
- Zebra video level indication
- The XLR 3-pin MIC IN connector for an external microphone
- Phantom power supply for an external microphone
- Color/monochrome signal selectable via switch for the viewfinder

SYSTEM VERSATILITY

Many advanced features and functions enable the DXC-M7 to be used in various camera system applications: portable VTR recording, field production, corporate in-house studios, and even commercial video production. The DXC-M7's high quality picture and operational ease promises to make it the key component for any video production. The DXC-M7 extends its system versatility with its newly designed optional equipment: the CCU-M7 Camera Control Unit, the RM-M7G Remote Control Unit, and the CA-M7 Studio Adaptor.

CCU-M7 Camera Control Unit

The CCU-M7 Camera Control Unit allows the remote control of the DXC-M7 via CCZ-A cables. The compact unit, which is 19-inch rack mountable and 2-units high, provides full control of the DXC-M7 with a maximum cable length of 300 meters (990ft.).



● Scene File facility

The CCU-M7 has Scene File capability. The values set for the controls of up to four scenes can be stored in the scene file memory. The CCU-M7 can memorize the control values for four types of shooting conditions. The

memorized values can be recalled by pushing a button on the front panel of the CCU-M7. By using the Scene File facility, the operator can easily reproduce the previously adjusted control values for either outdoor or indoor shooting, or for any lighting conditions. Memorized controls include gammas, pedestals, detail level, knee point, iris and gain.

RM-M7G Remote Control Unit

The RM-M7G Remote Control Unit is a compact and lightweight hand-held control unit. The RM-M7G allows remote control of the basic functions of the DXC-M7 for use in simple field production. The RM-M7G can also be used as a remote operational panel for the CCU-M7.

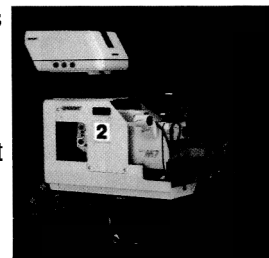


CA-M7 Studio Adaptor

The CA-M7 Studio Adaptor enables more stable operation of the DXC-M7 in studios. In a studio production, the DXC-M7 can be firmly installed in the CA-M7, and it offers more stability when using a tripod.

When the DXF-50/40 optional viewfinder is mounted on the CA-M7, the zone generator built into the CA-M7 displays center marker, safety zone and box cursor.

For more operational convenience, the RM-M7G Remote Control Unit can be mounted on the rear panel of the CA-M7.



Multiple VTR Interface

The DXC-M7 can be interfaced with various types of portable VTRs, including the 1", 1/2" Betacam, 3/4" U-matic, other 1/2" format VTRs, by setting the VTR select switch inside the camera to the appropriate position.

Versatile Power Supplies

In the field, the DXC-M7 can operate for approximately 70 minutes continuously with one NP-1A Rechargeable Battery Pack installed in the battery compartment of the camera, or 140 minutes with two NP-1A batteries encased in the optional DC-8 Battery Adaptor, which can be attached to the back of the camera via an optional CAC-21.

For longer operation, the DXC-M7 can be powered by an external power supply of DC 12V connected to the XLR EXT DC-IN (4-pin) connector.

In a studio, the CCU-M7 Camera Control Unit or the CMA-8 AC Power Adaptor is used for AC power operation.



DXC-M7 PRODUCT CONFIGURATIONS

DXC-M7K



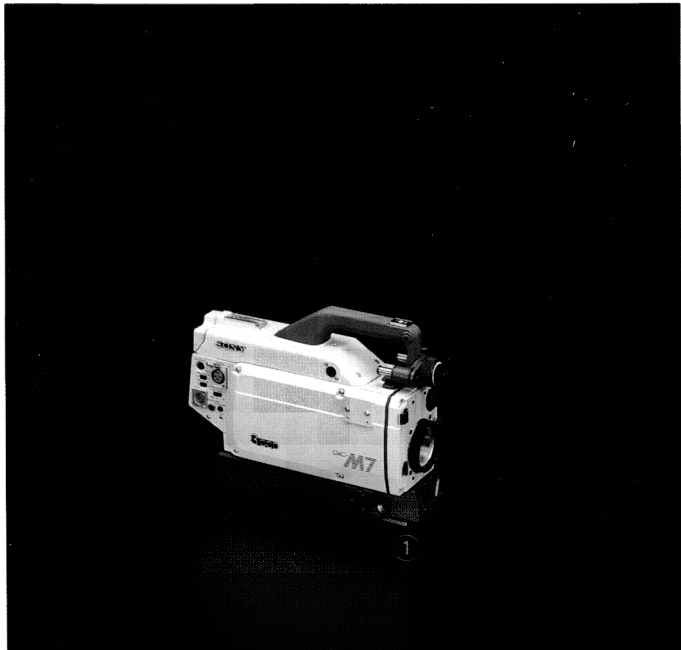
- ① Color video camera head
- ② Zoom lens VCL-915BYA
- ③ 1.5" viewfinder DXF-M7
- ④ Microphone holder CAC-1
- ⑤ Tripod adaptor VCT-14
- ⑥ Camera connecting cable CCZQ-A2
- ⑦ Carrying case LC-M7G

DXC-M7



- ① Color video camera head
- ② 1.5" viewfinder DXF-M7
- ③ Microphone holder CAC-1
- ④ Tripod adaptor VCT-14
- ⑤ Camera connecting cable CCZQ-A2
- ⑥ Carrying case LC-M7G

DXC-M7H

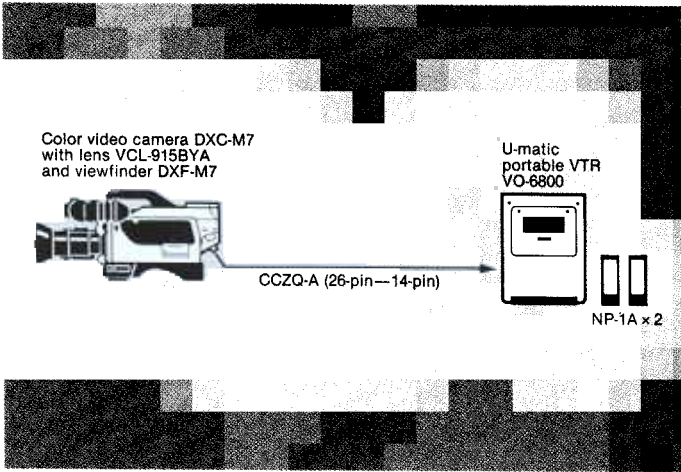


- ① Color video camera head

Model	DXC-M7K	DXC-M7	DXC-M7H
Composition			
Color video camera head	Yes	Yes	Yes
Zoom lens VCL-915BYA	Yes	Option	Option
1.5" viewfinder DXF-M7	Yes	Yes	Option
Microphone holder CAC-1	Yes	Yes	Option
Tripod adaptor VCT-14	Yes	Yes	Option
Camera connecting cable CCZQ-A2	Yes	Yes	Option
Carrying case LC-M7G	Yes	Yes	Option

1. Portable Operation (NP-1A Battery Operated)

When two NP-1A rechargeable battery packs are installed in the VO-6800, continuous operation of approximately 70 minutes is possible.

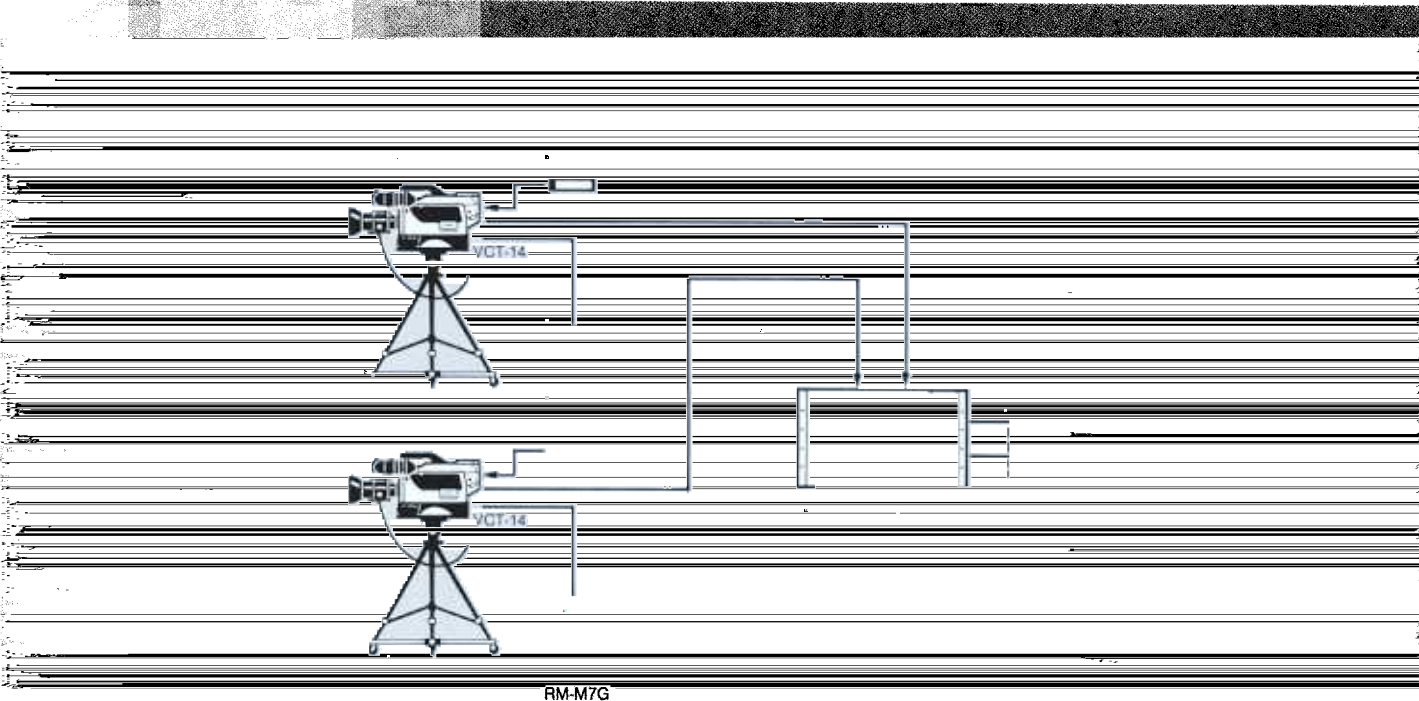


VTR Interface

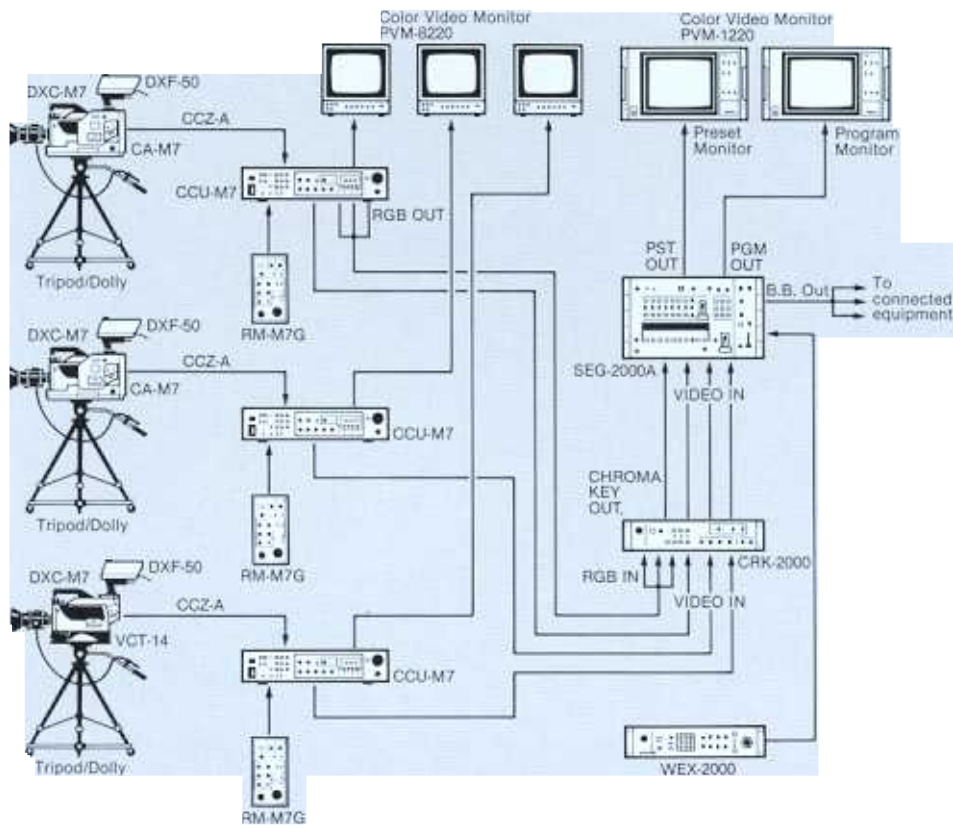
The DXC-M7 can be interfaced with various types of portable VTRs, including the 1", 1/2" Betacam, 3/4" U-matic, 1/2" VHS formats, by setting the VTR select switch inside the camera to the appropriate position shown in the chart. Certain functions of any particular VTR may not be compatible with the DXC-M7.

VTR select switch	VTRs	Cable for connection
VTR 1	U-matic, 1" VTR	CCZQ-A
	Betacam	CCZ-A
VTR 2	VHS format VTR by Panasonic	CCZJ
VTR 3	Y/C input equipped 1/2" format VTR	CCZQ

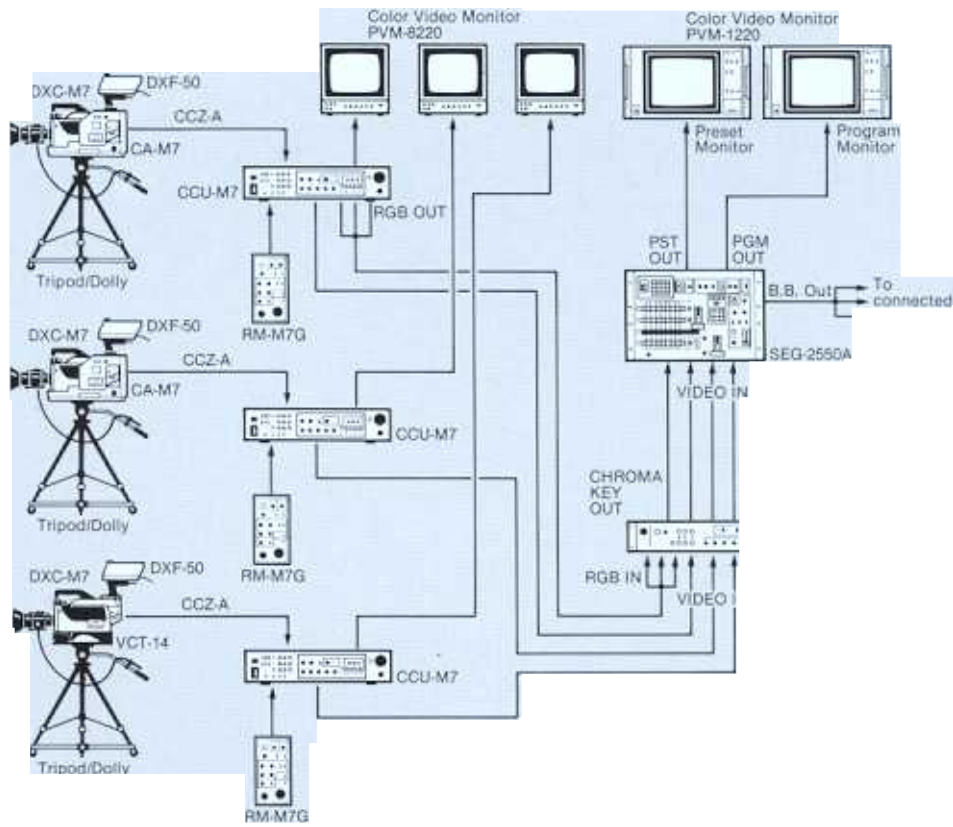
2. Field Camera Operation



3. Studio Operation (Example 1)



4. Studio Operation (Example 2)



OPTIONAL ACCESSORIES

Lenses

VCL-915BYA (F1.8, 9.5–143mm)
 J13 × 9B I-BA (F1.6, 9–117mm)
 J14 × 8B4 IRS (F1.7, 8–112mm)
 A3.5 × 6.5BRM-28 (F1.7, 6.5–23mm)
 A12 × 9BERM-78 (F1.7, 9–108mm)
 A14 × 9BERM-28P-2 (F1.7, 9–126mm)



VCL-915BYA



J13 × 9B I-BA



J14 × 8B4 IRS



A3.5 ×
6.5BRM-28



A12 ×
9BERM-78



A14 ×
9BERM-28P-2



CCU-M7
Camera Control Unit



DXF-50
5" Monochrome Electronic
Viewfinder



VCT-14
Tripod Adaptor



CAC-21
Battery Adaptor Shoe



RM-M7G
Remote Control Unit



DXF-40
4" Monochrome Electronic
Viewfinder



NP-1A
Rechargeable Ni-Cd Battery Pack



ECM-672
Electret Condenser Microphone



CA-M7
Studio Adaptor



CCU-M3
Camera Control Unit



BC-1WA
Battery Charger for up to
four NP-1A Battery Packs



C-74
Condenser Microphone



DXF-M7
1.5" Monochrome Electronic
Viewfinder



CMA-8
AC Power Adaptor for DXC-M7



DC-8
Camera Battery Adaptor



EC-0.5C2
Microphone Cable

PERIPHERAL EQUIPMENT



CAC-1
Camera Microphone Holder
for ECM-672/C-74



VO-6800
Portable U-matic Videocassette
Recorder



CRK-2000
Universal Chroma Keyer



CAC-50
VF Attachment Metal



VO-5850
U-matic Videocassette Recorder



PVM-1220
Color Video Monitor



DR-100
Intercommunication Headset



VO-9600
U-matic SP Videocassette Recorder



PVM-1271Q
Color Video Monitor



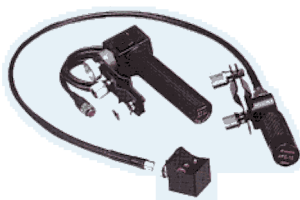
LC-M7G
Carrying Case for DXC-M7



SEG-2550A
Color Special Effect Generator



PVM-8020
Portable Video Monitor



LO-26
Flexible Cable Unit (Combination of
Servo Zoom and Manual Focus Unit)
for VCL-915BYA



WEX-2000
Wipe Pattern Extender



PVM-91
Monochrome Video Monitor

SPECIFICATIONS

DXC-M7 Video Camera Head

	Interline-Transfer CCD, 3-Chip
	8.8mm x 6.6mm (equivalent to a 2/3-inch pickup tube)
Built-in filters:	1: 3,200K 2: 5,600K + 1/4 ND 3: 5,600K 4: 5,600K + 1/8 ND
Lens mount:	Bayonet mount
Signal system:	EIA standards, NTSC color system
Scanning system:	2 : 1 interlaced, 525 lines, 60 fields/sec.
Horizontal frequency:	15.734kHz
Vertical frequency:	
Sync system:	Internal or External with the VBS or BS signal to the GENLOCK IN connector, or to the VTR/CCU connector from the CCU-M7
Horizontal resolution:	700 TV lines (luminance) 570 TV lines (R/G/B)
Minimum illumination:	26 lux with F1.8, +18dB
Sensitivity:	
Gain selection:	
Shutter speed selection:	OFF, 1/100, 1/250, 1/500, 1/1000, 1/2000 second
Video output:	VBS: 1.0Vp-p, sync negative, 75 ohms Y: 1.0Vp-p, sync negative, 75 ohms R/Y/B/Y: 0.7Vp-p (75% color bars) R/G/B: 0.714Vp-p, 75 ohms Y/C: [Y] 1.0Vp-p, sync negative, 75 ohms [C] 300mVp-p, 75 ohms
Signal-to-noise ratio:	60dB (gamma and detail off)
Registration:	
Geometric distortion:	
Inputs/Outputs:	
	: XLR-type, 3-pin
	: XLR-type, 4-pin

Power requirements:

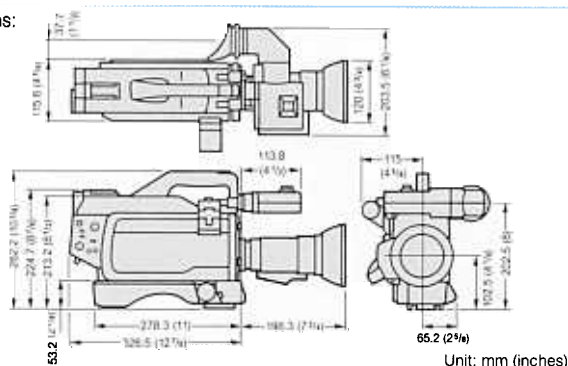
Power consumption:

Operating temperature:

Storage temperature:

Weight:

Dimensions:



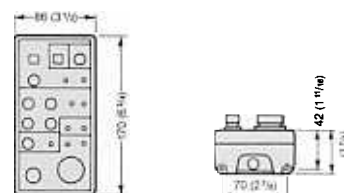
Controls of the DXC-M7 Camera Head

- Gain (0/ + 9/ + 18dB) selection
- BARS/CAM output selection
- VTR START button
- Function status display ON/OFF
- Shutter speed selection (OFF, 1/100, 1/250, 1/500, 1/1000, 1/2000 second)*
- Auto Iris Override*
- Iris manual control
- Auto White Balance
- White Balance Memory (A/B)
- R/B Gain control*
- Auto Black Balance
- R/B Pedestal control*
- Master Pedestal control*
- Master Gamma control*
- R/B Gamma control*
- Dynamic Contrast Control ON/OFF
- Manual Knee Point control*
- Preset Knee Point selection (Max./Preset/Min.)*
- Detail Level control*
- Sub-carrier Phase control
- Horizontal Phase control
- Low Light Caution ON/OFF*
- White Balance Alarm ON/OFF*

*: Can be controlled with the UP/DOWN switches on the front of the camera head below the lens mount.

RM-M7G Remote Control Unit

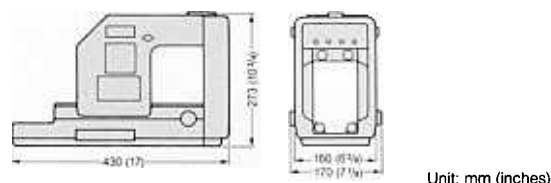
Inputs/Outputs:	CAMERA : 10-pin
	MONITOR OUT : BNC-type
	AUXILIARY IN : 10-pin
Maximum cable length:	100m (330ft.) with CCA-7 cable
Power requirements:	DC 9 to 17V
Power consumption:	0.4W
	500 g (1 lb 2 oz)



CA-M7 Studio Adaptor

Inputs/Outputs:	CAMERA : 8-pin
	VIEWFINDER : 8-pin
Power requirements:	
Power consumption:	
Weight:	
Supplied accessories:	Camera Number Sheet, Connecting cable CCA-7-0.5

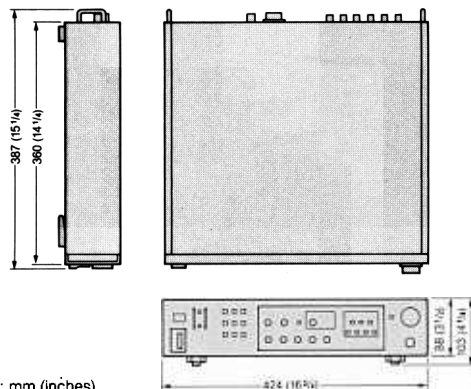
Dimensions:



CCU-M7 Camera Control Unit

AC 85V to 138V, 50/60Hz	
	BNC-type, 1.0Vp-p, sync negative, 75 ohms
R/G/B OUT	: BNC-type, 0.714Vp-p, 75 ohms
	BNC-type Y: 1.0Vp-p, sync negative, 75 ohms R-Y/B-Y: 0.7Vp-p (75% color bars)
Y/C OUT	Y/C connector (4-pin), 1.0Vp-p, 75 ohms
SYNC OUT	BNC-type, 4.0Vp-p, 75 ohms, negative
GENLOCK IN	BNC-type, VBS (1.0Vp-p) or BB (0.286Vp-p), loop-through
RET VIDEO IN	: BNC-type, VBS, 1.0Vp-p, loop-through
CAMERA	: Sony Z-type, 26-pin
TALLY/INTERCOM	: DIN 4-pin or screw terminals
MIC OUT	: XLR-type, 3-pin, -20dB
Operating temperature:	-10°C to +45°C (14°F to 113°F)
Storage temperature:	-20°C to +50°C (-4°F to 122°F)
Weight:	8.5 kg (18 lb 12 oz)
Supplied accessory:	AC power cord Rack mount metals

Dimensions:



Unit: mm (inches)

DXF-M7 Viewfinder

Picture tube:	1.5-inch monochrome
Indicators:	REC/TALLY indicator BATT indicator GAIN UP indicator
Resolution:	400 TV lines
Power requirements:	DC 12V
Power consumption:	2.3W
Weight:	Approx. 600g (1 lb 5 oz)
Dimensions:	Approx. 201(W) × 68(H) × 184(D)mm (8 × 2 3/4 × 7 1/4")

Controls from the CCU-M7

- Gain 0/+9/+18dB selection*
- Output mode BARS/CAM/TEST selection
- Function status display ON/OFF
- Shutter speed selection
(1: OFF, 2: 1/100, 3: 1/250, 4: 1/500, 5: 1/1000, 6: 1/2000 second)*
- Iris MANUAL/AUTO*
- Auto Iris Override*
- White balance (AUTO/MANUAL/PRESET)
- R/B gain control (White balance manual control)*
- Auto black balance (AUTO/MANUAL/PRESET)
- Master pedestal control*
- R/B pedestal control*
- Master gamma MANUAL/PRESET*
- R/B gamma MANUAL/PRESET*
- Knee point AUTO/MANUAL/PRESET*
- Detail level control*
- Sub-carrier phase control
- Horizontal phase control
- Scene File operation
(RECALL/STORE/DATA CLEAR/PANEL)
- Tally/Intercom

*: Can be memorized in the Scene file

VCL-915BYA Zoom Lens

Focal length:	9.5–143mm
Zoom ratio:	
Zoom control:	
Maximum aperture ratio:	
Iris control:	Manual/Auto, selectable 1.8 to 16 and C (Close)
Range of object field: (at the distance of 1 meter)	W (Wide angle): 647 × 862mm (25 1/2 × 34") T (Telephoto): 43 × 57mm (1 3/4 × 2 1/4")
Minimum object distance:	1m
Filter thread:	φ82mm
Mount:	Bayonet mount
Weight:	Approx. 1.6 kg (3 lb 8 oz) with lens hood
Dimensions:	Approx. 120(φ) × 189(L)mm (4 3/4 × 7 1/2")

VCT-14 Tripod Adaptor

Weight:	Approx. 900 g (1 lb 16 oz)
Dimensions:	Approx. 282(W) × 27(H) × 80(D)mm (11 1/8 × 1 1/8 × 3 1/4")

LC-M7G Carrying Case

Weight:	5.8 kg (12 lb 13 oz)
Dimensions:	686(W) × 440(H) × 310(D)mm (27 1/8 × 17 3/8 × 12 1/4")

Design and specifications subject to change without notice.

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